

AMENDMENTS TO THE CLAIMS

Claims 1-17 (Canceled)

18. (New) A plasma doping method comprising:

generating mixed plasma of a mixed substance made of a first substance containing impurity to be doped and a second substance having higher ionization energy than the first substance, the mixed plasma having ion current density of 1.1 mA/cm² or higher; and

doping an impurity on a substrate using the mixed plasma;

wherein an amount of the second substance is larger than that of the first substance; the first substance is B₂H₆; the second substance is rare gas; a concentration of B₂H₆ in the mixed substance is below 0.05%; and a dose of impurity on the substrate is controllable by changing application time of bias voltage in the step of doping.

19. (New) The plasma doping method as defined in Claim 18,

wherein the first substance is B₂H₆; the second substance is rare gas; a concentration of B₂H₆ in the mixed substance is below 0.5%; and the step of generating plasma is a step of generating helicon plasma.

20. (New) The plasma doping method as defined in Claim 18,

wherein the step of generating plasma is generating the plasma with electron temperature of 6.0 eV or higher.

21. (New) The plasma doping method as defined in Claim 18, wherein the rare gas is He.

22. (New) The plasma doping method as defined in Claim 18, wherein the bias voltage is -60 V or less.

23. (New) The plasma doping method as defined in Claim 18 further comprising a preliminary step before the step of generating mixed plasma, the preliminary step being generating plasma of a third substance having smaller ionization energy than the first substance, and the preliminary step and the step of generating mixed plasma being consecutive.

24. (New) The plasma doping method as defined in Claim 18, wherein the first substance is selected from at least one of BF_3 and $\text{B}_{10}\text{H}_{14}$ instead of B_2H_6 , and the second substance is selected from at least one of H, N, O, Cl, H_2 , NO, N_2 , O_2 , CO, CO_2 , H_2O , SF_6 , Br_2 and Cl_2 instead of the rare gas.

25. (New) The plasma doping method as defined in Claim 18, wherein the method is applied to a manufacture of electric and electronic devices such as semiconductor devices and liquid crystal panels, and passive electric devices such as capacitors, resistors and coils.

26. (New) A plasma doping method comprising:

generating mixed plasma of a mixed substance including a first substance containing impurity to be doped and a second substance having higher ionization energy than the first substance, the mixed plasma having electron temperature of 6.0 eV or higher; and

doping impurity on a substrate using the mixed plasma;

wherein an amount of the second substance is larger than that of the first substance; the first substance is selected from at least one of B_2H_6 , BF_3 and $\text{B}_{10}\text{H}_{14}$; the second substance is selected from at least one of He, Ne, Rn, AR, H, N, O, Kr, Xe, Cl, H_2 , NO, N_2 , O_2 , CO, CO_2 , H_2O , SF_6 , Br_2 and Cl_2 ; a concentration of the first substance in the mixed substance is below 0.05%; and a dose of impurity on the substrate is controllable by changing application time of bias voltage in the step of doping.

27. (New) The plasma doping method as defined in Claim 19, wherein the rare gas is He.

28. (New) The plasma doping method as defined in Claim 19, wherein the first substance is selected from at least one of BF_3 and $\text{B}_{10}\text{H}_{14}$ instead of B_2H_6 , and the second substance is selected from at least one of H, N, O, Cl, H_2 , NO, N_2 , O_2 , CO, CO_2 , H_2O , SF_6 , Br_2 and Cl_2 instead of the rare gas.